OKI
PRINTING SOLUTIONS

OkiPos 441

User's Guide

59307701

Federal Communications Commission
Radio Frequency Interference
Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

For compliance with the Federal Noise Interference Standard, this equipment requires a shielded cable.

This statement will be applied only for the printers marketed in U.S.A.

Statement of
The Canadian Department of Communications
Radio Interference Regulations

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

The above statement applies only to printers marketed in Canada.

CE
Manufacturer's Declaration of Conformity

EC Council Directive 89/336/EEC of 3 May 1989

This product, has been designed and manufactured in accordance with the International Standards EN 61000-6-3 / 2001 and EN 55024 / 1998, following the provisions of the Electro Magnetic Compatibility Directive of the European Communities as of May 1989.

EC Council Directive 73/23/EEC and 93/68/EEC of 22 July 1993

This product, has been designed and manufactured in accordance with the International Standards EN 60950-1, following the provisions of the Low Voltage Directive of the European Communities as of 2001.

The above statement applies only to printers marketed in EU.

Trademark acknowledgments

OKIPOS441: Oki Data Corporation

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- The contents of this manual are subject to change without notice.
- All efforts have been made to ensure the accuracy of the contents of this manual at the time of going to press. However, should any errors be detected, OKI would greatly appreciate being informed of them.
- The above notwithstanding, OKI can assume no responsibility for any errors in this manual.

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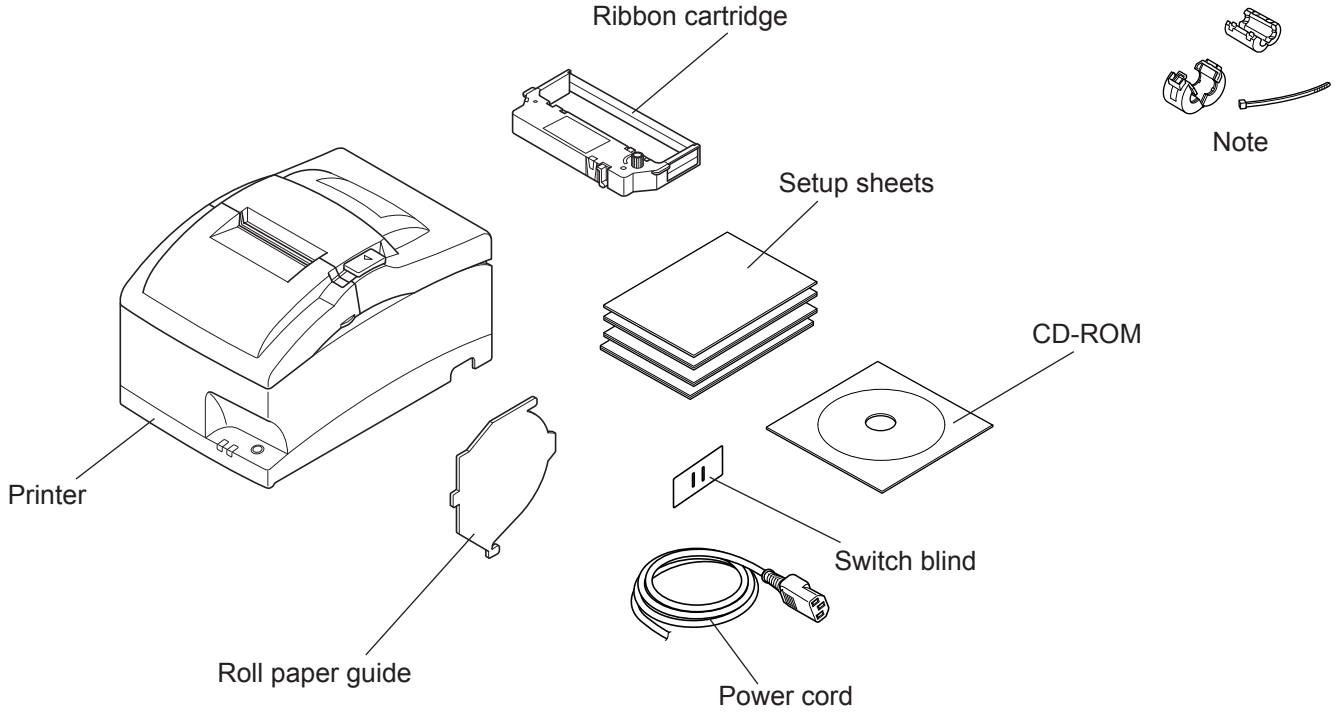
1. Outline

OKIPOS441 Series Serial Impact Dot Matrix Printer is designed for use with electronic instruments such as POS, banking equipment, computer peripheral equipment, etc.

2. Unpacking and Installation

2-1. Unpacking

After unpacking the unit, check that all the necessary accessories are included in the package.



Note: The ferrite core and fastener provided with your printer depend on your printer configuration.

Fig. 1-1 Unpacking

If anything is missing, contact the dealer where you bought the printer and ask them to supply the missing part. Note that it is a good idea to keep the original box and all the packing materials just in case you need to pack the printer up again and send it somewhere at a later date.

2-2. Choosing a place for the printer

Before actually unpacking the printer, you should take a few minutes to think about where you plan to use it. Remember the following points when doing this.

- ✓ Choose a firm, level surface where the printer will not be exposed to vibration.
- ✓ The power outlet you plan to connect to for power should be nearby and unobstructed.
- ✓ Make sure that the printer is close enough to your host computer for you to connect the two.
- ✓ Make sure that the printer is not exposed to direct sunlight.
- ✓ Make sure that the printer is well away from heaters and other sources of extreme heat.
- ✓ Make sure that the surrounding area is clean, dry, and free of dust.
- ✓ Make sure that the printer is connected to a reliable power outlet. It should not be on the same electric circuit as copiers, refrigerators, or other appliances that cause power spikes.
- ✓ Make sure that the room where you are using the printer is not too humid.

⚠WARNING

- ✓ Shut down your equipment immediately if it produces smoke, a strange odor, or unusual noise. Immediately unplug the equipment and contact your dealer for advice.
- ✓ Never attempt to repair this product yourself. Improper repair work can be dangerous.
- ✓ Never disassemble or modify this product. Tampering with this product may result in injury, fire, or electric shock.

2-3. Handling Care

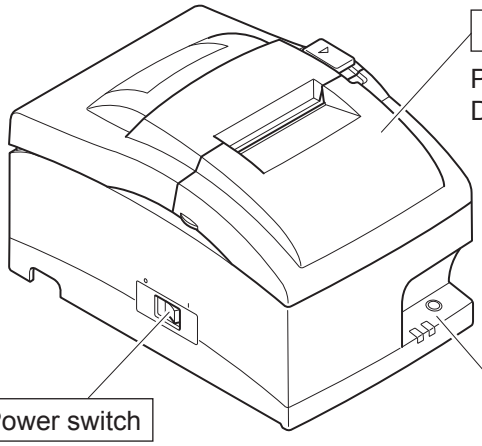
1. Be careful not to drop paper clips, pins or other foreign matter into the unit as these cause the printer to malfunction.
2. Do not attempt to print when either paper or ribbon cartridge is not located in the printer, otherwise the print head can be damaged.
3. Do not open the cover while printing.
4. Do not touch the print head immediately after printing as it gets very hot.
5. Use only roll paper that is not glued to the core.
6. When the paper end mark appears on the paper, replace the roll paper before it runs out.

2-4. Maintenance

Essentially, your printer is a robust piece of equipment, but should be treated with a modicum of care in order to avoid malfunctions. For example:

1. Keep your printer in a “comfortable” environment. Roughly speaking, if you feel comfortable, then the environment is suitable for your printer.
2. Do not subject the printer to physical shocks or excessive vibration.
3. Avoid over-dusty environments. Dust is the enemy of all precision mechanical devices.
4. To clean the exterior of the printer, use a cloth barely dampened with either water with a little detergent or a little alcohol, but do not allow any liquid to fall inside the printer.
5. The interior of the printer may be cleaned with a small cleaner or a compressed-air aerosol (sold for this purpose). When performing this operation, be sure not to bend or damage any cable connections or electronic components.

3. Parts Identification and Nomenclature



Printer cover

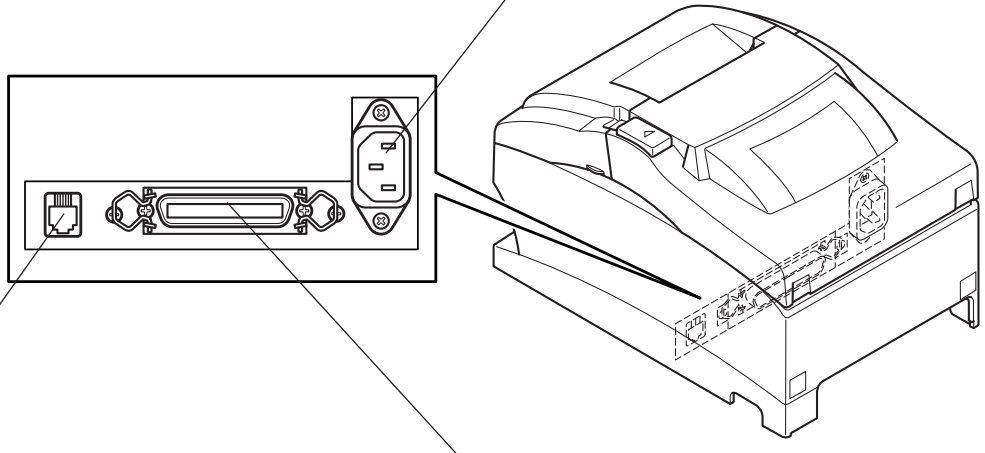
Protects the printer from dust and reduces noise.
Do not open the cover while printing.

Control panel

Features one control switch and two indicators to indicate printer status.

Power switch

Turns printer power on and off.



Power connector

For connection of the power cord.

Peripheral unit drive circuit connector

Connects to peripheral units such as cash drawers, etc.
Do not connect this to a telephone.

Interface connector

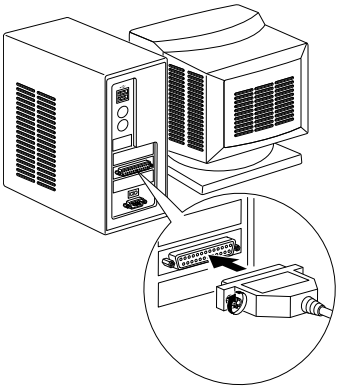
Connects the printer with host computer.

4. Setup

4-1. Connecting the Cable to the PC

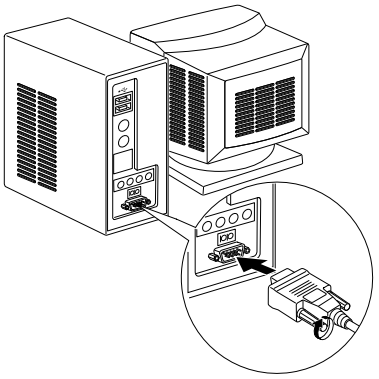
4-1-1. Parallel Interface Cable

Connect the parallel interface cable to a parallel port of your PC.



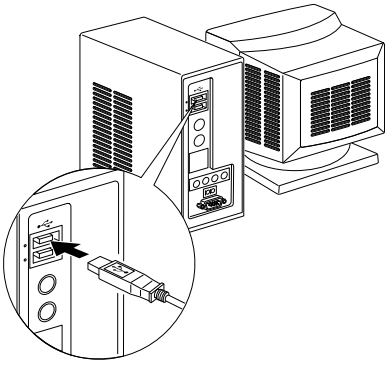
4-1-2. RC-232 Interface Cable

Connect the RC-232 interface cable to a RS-232 port of your PC.



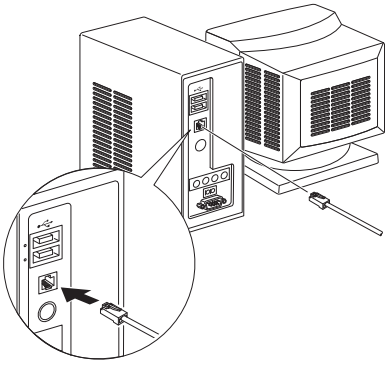
4-1-3. USB Interface Cable

Connect the USB interface cable to a USB port of your PC.



4-1-4. Ethernet Interface cable

Connect the ethernet interface cable to a ethernet port of your PC.



4-2. Connecting the Cable to the Printer

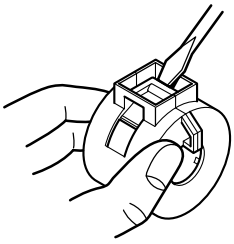
Note that the interface cable is not provided. Please use a cable that meets specifications.

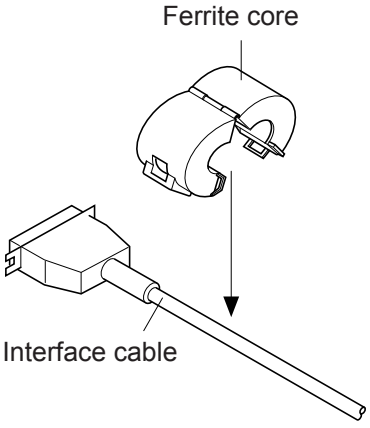
⚠CAUTION

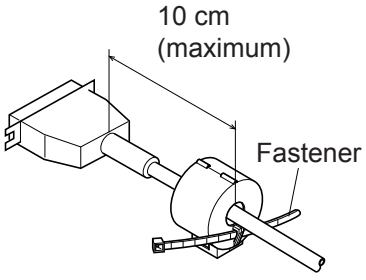
Before connecting/disconnecting the interface cable, make sure that power to the printer and all the devices connected to the printer is turned off. Also make sure the power cable plug is disconnected from the AC outlet.

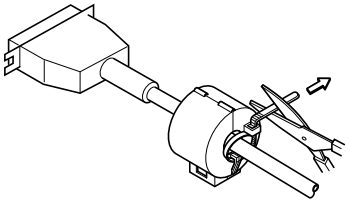
4-2-1. Parallel Interface Cable

(1) Make sure the printer is turn off.
(2) Affix the ferrite core onto the cable as shown in the illustration.
(3) Pass the fastener through the ferrite core.
(4) Loop the fastener around the cable and lock it. Use scissors to cut off any excess.

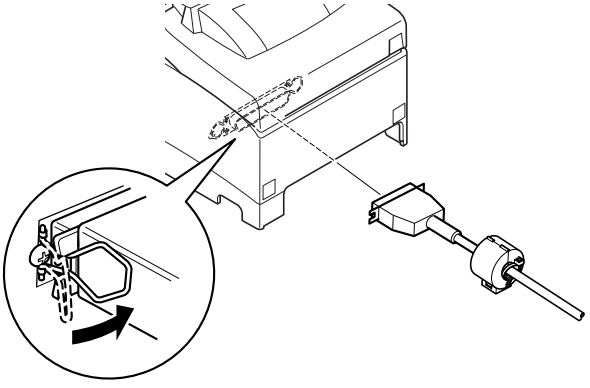








(5) Connect the interface cable to the connector on the rear panel of the printer.
(6) Fasten the connector clasps.



4-2-2. RS-232 Interface Cable

(1) Make sure the printer is turn off.

⚠CAUTION

Before connecting/disconnecting the interface cable, make sure that power to the printer and all the devices connected to the printer is turned off. Also make sure the power cable plug is disconnected from the AC outlet.

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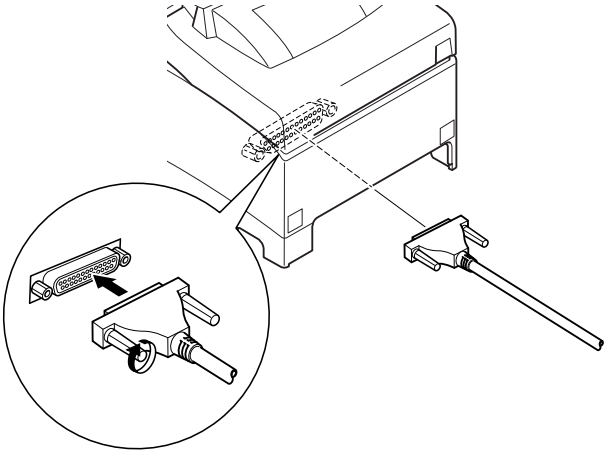
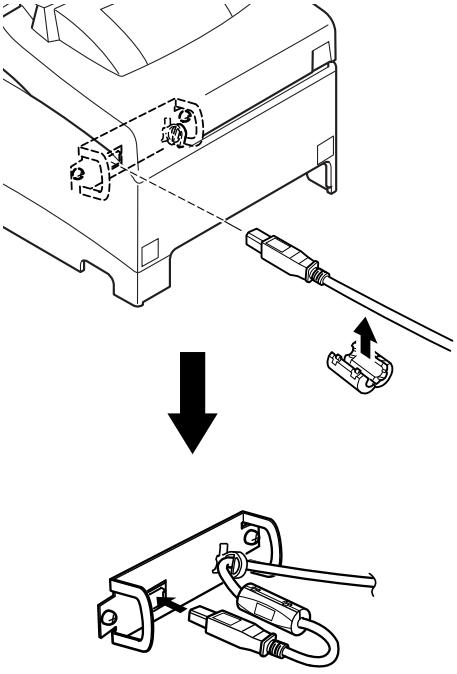
(2) Connect the interface cable to the connector on the rear panel of the printer.
(3) Tighten the connector screws.



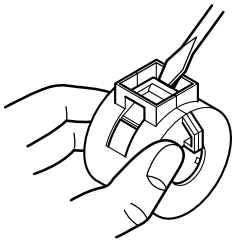
4-2-3. USB Interface Cable

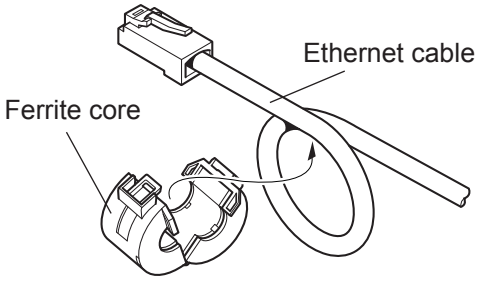
Affix the ferrite core onto the USB cable as shown in the illustration below and make sure to pass the cable through the cable support as shown in the illustration.

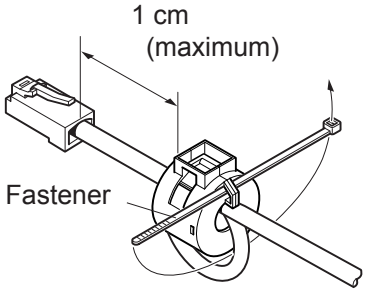


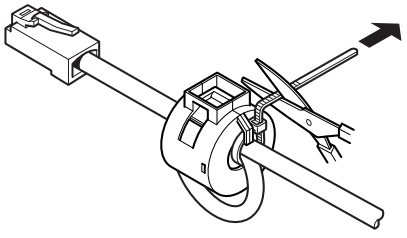
4-2-4. Connecting Ethernet Cable

(1) Make sure the printer is turned off.
(2) Affix the ferrite core onto the ethernet cable as shown in the illustration below.
(3) Pass the fastener through the ferrite core.
(4) Loop the fastener around the cable and lock it. Use scissors to cut off any excess.

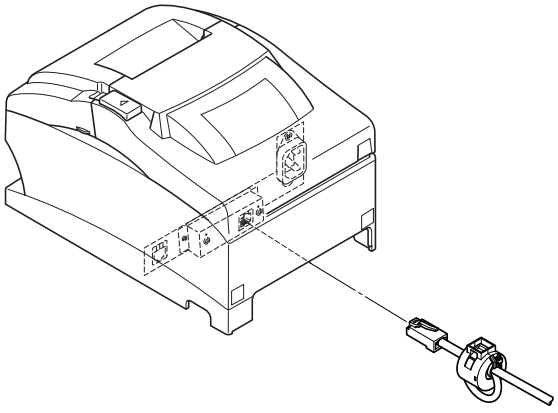








(5) Connect the interface cable to the connector on the rear panel of the printer.

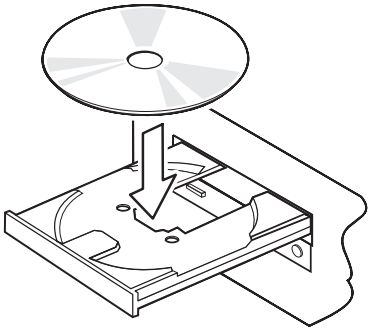


4-3. Installing the Printer Software

Here is the procedure for installing the printer driver and utility software, which are stored on the supplied CD-ROM.
The procedure applies to the Windows operating systems shown below.

- Windows 2000
- Windows XP
- Windows Vista

(1) Turn ON the power to your PC to start Windows.
(2) Insert the supplied CD-ROM (Drivers and Utilities) into the CD-ROM drive.
(3) Follow the instructions that appear on the screen.



4-4. Connecting to a Peripheral Unit

You can connect a peripheral unit to the printer using a modular plug. See “Modular plug” on page 33 for details about the type of modular plug that is required. Note that this printer does not come with a modular plug or wire, so it is up to you to obtain one that suits your needs.

Important!

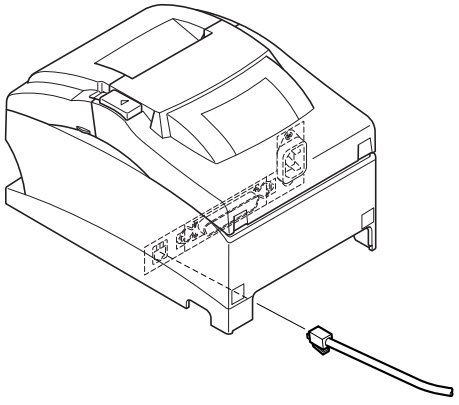
Make sure that the printer is turned off and unplugged from the AC outlet and that the computer is turned off before making connections.

(1) Connect the peripheral drive cable to the connector on the rear panel of the printer.

Important!

Do not connect a telephone line into the peripheral drive connector. Failure to observe this may result in damage to the printer.

Also, for safety purposes, do not connect wiring to the external drive connector if there is a chance it may carry peripheral voltage.



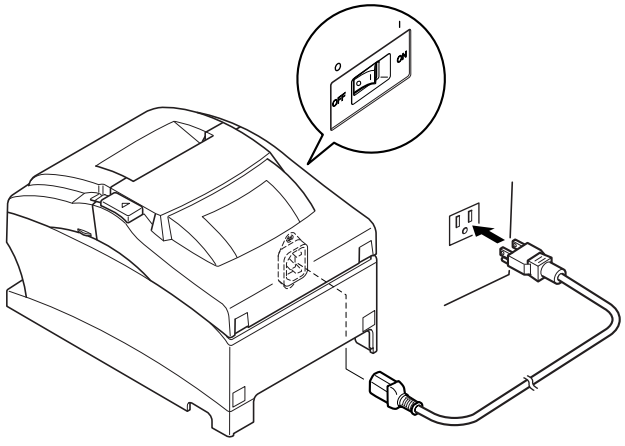
4-5. Connecting the Power Cord

Note: Before connecting/disconnecting the power cord, make sure that power to the printer and all the devices connected to the printer is turned off. Also make sure the power cable plug is disconnected from the AC outlet.

(1) Check the label on the back or bottom of the printer to make sure its voltage matches that of the AC outlet. Also make sure the plug on the power cord matches the AC outlet.

(2) If the power cord is not attached to the printer, plug the appropriate end into the AC inlet on the back of the printer.

(3) Plug the power cord into a properly grounded AC outlet.



Important!

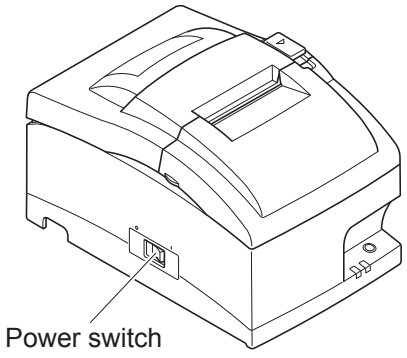
If the voltage shown on the label on the of your printer does not match the voltage for your area, contact your dealer immediately.

The power cord is designed for use with this printer only. Do not connect it to any other device.

4-6. Turning Power On

Make sure that the Power cord has been connected as described in 4-5.

Turn ON the power switch located on the front of the printer.
The POWER lamp on the control panel will light up.

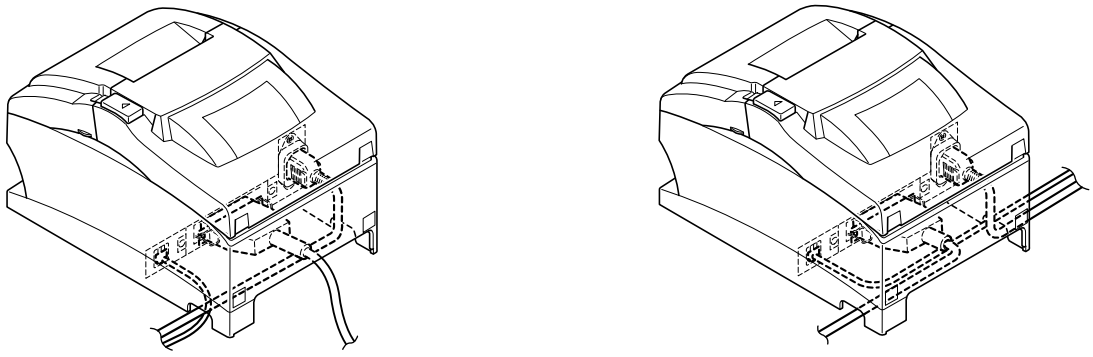


⚠*CAUTION*

We recommend that you unplug the printer from the power outlet whenever you do not plan to use it for long periods. Because of this, you should locate the printer so that the power outlet it is plugged into is nearby and easy to access.
When an Switch blind is affixed to the printer above the power switch, the ON/OFF marks of the power switch may be hidden. If this occurs, remove the power cord from the outlet to turn the printer OFF.

4-7. Installing the Cable

Install the cable as shown in the diagram below.

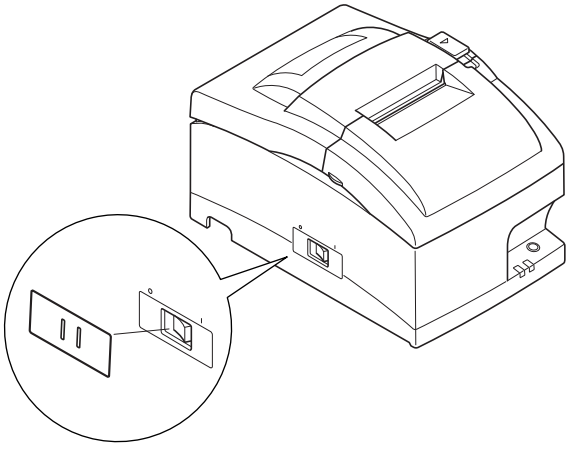


4-8. Switch Blind Installation

It is not necessary to install the switch blind. Only install it if it is necessary for you. By installing the switch blind, the following become possible.

- Preventing the power switch from being operated by mistake.
- Ensuring that other people can not easily operate the power switch.

Install the switch blind as shown in the diagram below.



The power switch can be turned ON (|) and OFF (O) by inserting a narrow instrument (ball pen etc) in the holes in the switch blind.

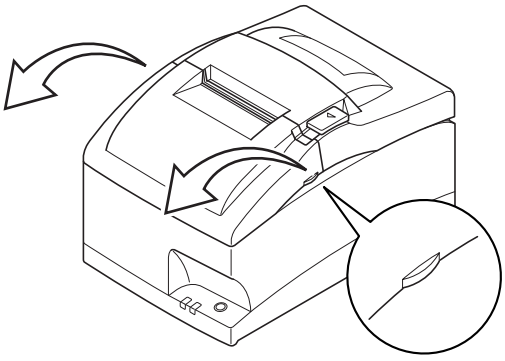
Important!

We recommend that you unplug the printer from the power outlet whenever you do not plan to use it for long periods. Because of this, you should locate the printer so that the power outlet it is plugged into is nearby and easy to access.

5. Loading the Ribbon Cartridge and Paper

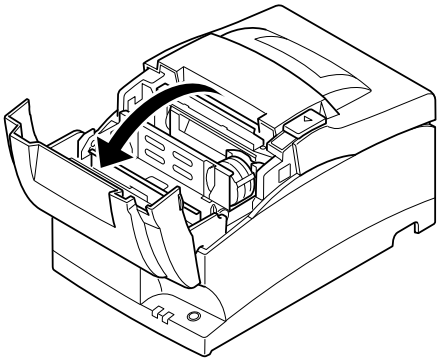
5-1. Loading the Ribbon Cartridge

① Turn off power to the printer.
② Open the front cover by holding the finger grips on both ends of the cover and lifting it up.

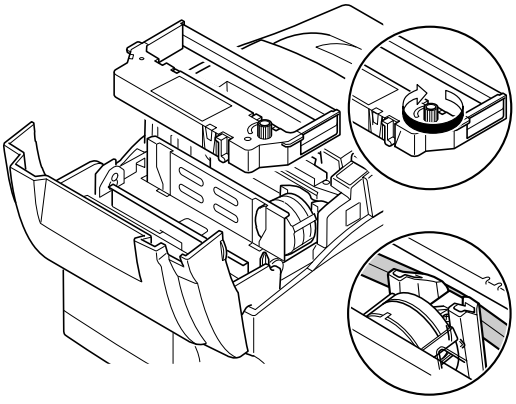


Important!

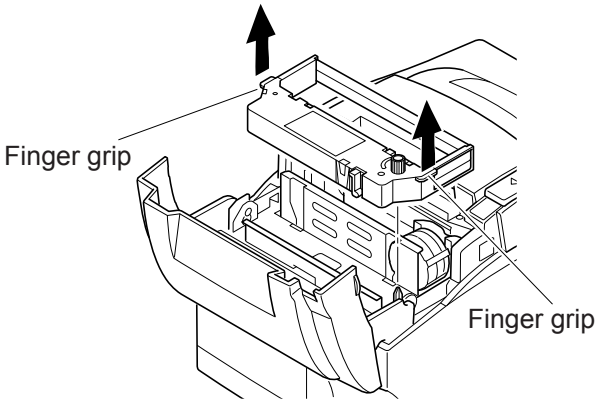
1. Do not touch the print head immediately after printing as it can be extremely hot.
2. Do not touch the cutter blade.
· There is a cutter inside the paper outlet slot. Not only should you not put your hand in the paper outlet slot while printing is in progress, never put your hand into the outlet even when printing is not in progress.



③ Place the ribbon cartridge in the direction shown in the figure and press it down to load it. If loading of the ribbon cartridge is not satisfactory, press down the cartridge while rotating the ribbon feed knob in the direction of the arrow.
④ Turn the ribbon feed knob of the ribbon cartridge in the direction of the arrow to remove slack in the ribbon.

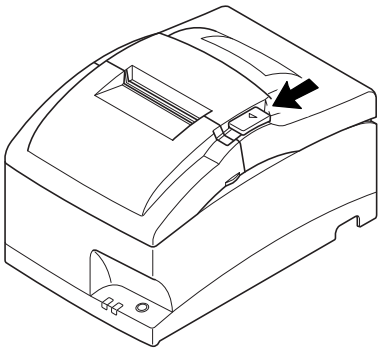


⑤ Close the front cover.
Note: When removing the ribbon cartridge, raise the finger grips as shown in the figure.



5-2. Loading the paper

① Open the printer cover by sliding the latch toward you.

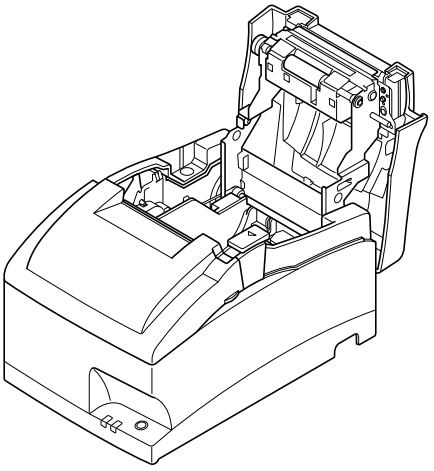


Important!

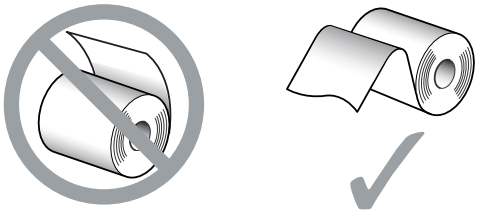
1. Do not touch the print head immediately after printing as it can be extremely hot.

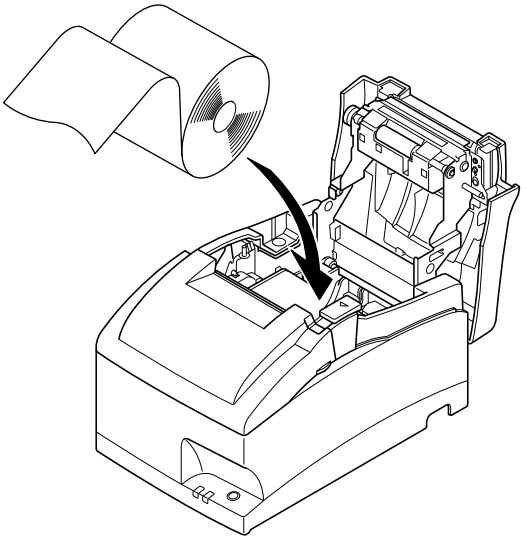
2. Do not touch the cutter blade.

- *There is a cutter inside the paper outlet slot. Not only should you not put your hand in the paper outlet slot while printing is in progress, never put your hand into the outlet even when printing is not in progress.*



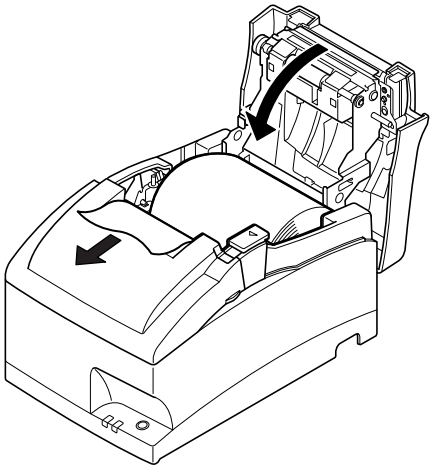
② While observing the direction of the roll, set the paper roll into the hollow, and pull on the leading edge of the paper toward you.

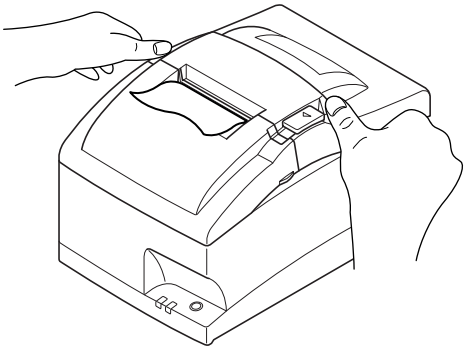




③ Push down both sides of the printer cover to close.

Note: Make sure that the printer cover is securely closed.





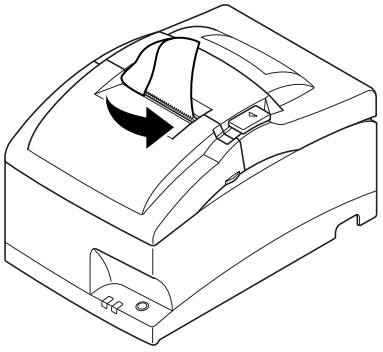
④ **Tear Bar Model:**

Tear off the paper as shown.

Auto Cutter Model:

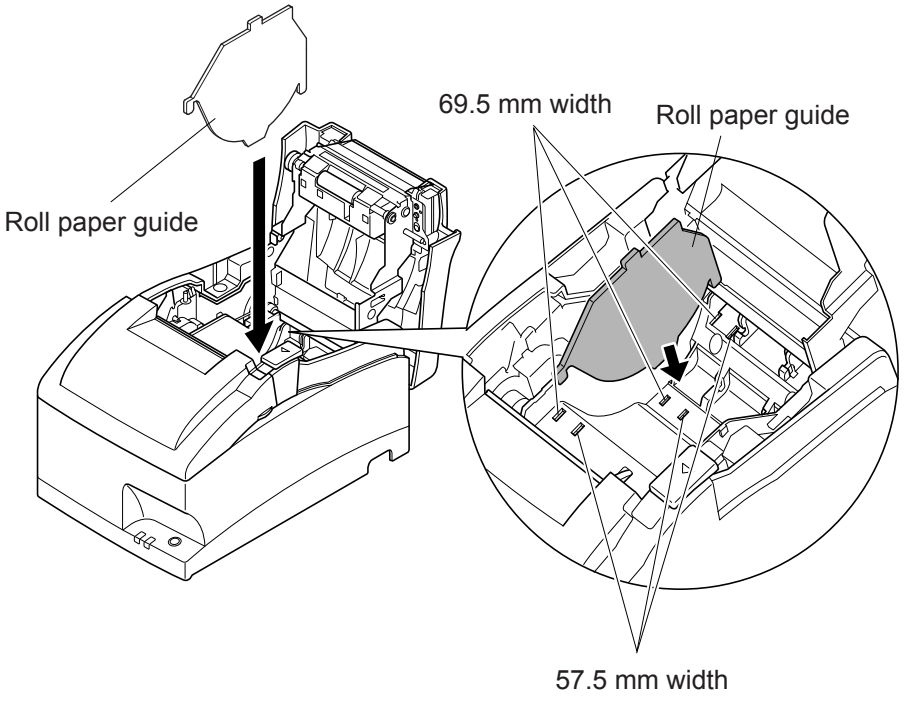
If the printer cover is closed after turning on the power, the cutter operates automatically and the front end of the paper is cut.

Note: When the paper end mark appears on the paper, replace the roll paper before it runs out.



5-3. Installing the Roll Paper Guide

When using paper roll with 57.5 mm or 69.5 mm width, install the attached roll paper guide in the groove in the printer. The setting for memory switch 2-A and 2-B must be changed to change the print width.
For instructions on setting the memory switch, please refer to the separate Specification Manual.



Caution Symbol

This symbol is placed near the print head to indicate that it may be hot. Never touch the print head immediately after the printer has been used. Let the print head cool for a few minutes before touching it.

This symbol is placed near the cutter (auto cutter or manual cutter tear bar). Never touch the cutter blade, as you could injure your fingers.

This symbol label or stamp is placed near the screws securing the case, which should not be opened by individuals other than service personnel.
Individuals, other than service personnel, should not remove these screws.
High voltage areas in the case can be dangerous.

⚠WARNING

- ✓ Shut down your equipment immediately if it produces smoke, a strange odor, or unusual noise. Immediately unplug the equipment and contact your dealer for advice.
- ✓ Never attempt to repair this product yourself. Improper repair work can be dangerous.
- ✓ Never disassemble or modify this product. Tampering with this product may result in injury, fire, or electric shock.
- ✓ Do not touch the cutter blade.
  - There is a cutter inside the paper outlet slot. Not only should you not put your hand in the paper outlet slot while printing is in progress, never put your hand into the outlet even when printing is not in progress.
  - The printer cover can be opened when replacing the paper. However, since the cutter blade is on the inside of the printer cover, be careful not to place your face or hands too close to the cutter blade.
- ✓ During and immediately after printing, the area around the print head is very hot. Do not touch it, as you could be burned.
- ✓ Since working on the cutter may be dangerous, be sure to turn off the printer first.

⚠CAUTION

- ✓ We recommend that you unplug the printer from the power outlet whenever you do not plan to use it for long periods. Because of this, you should locate the printer so that the power outlet it is plugged into is nearby and easy to access.
- ✓ If the voltage shown on the label on the of your printer does not match the voltage for your area, contact your dealer immediately.
- ✓ Make sure that the printer is turned off and unplugged from the AC outlet and that the computer is turned off before making connections.
- ✓ Do not connect a telephone line into the peripheral drive connector.

  Failure to observe this may result in damage to the printer.

  Also, for safety purposes, do not connect wiring to the external drive connector if there is a chance it may carry peripheral voltage.
- ✓ Do not operate the cover open lever while pressing on the printer cover with your hand.
- ✓ Do not pull the cover open lever and open the printer cover when printing is in progress or when the auto cutter is operating.
- ✓ Do not pull out paper while the printer cover is closed.
- ✓ If liquids, foreign objects (coins and paper clips), and so on enter the printer, turn off the printer, unplug it from the AC outlet, and contact your dealer for advice. Continued use could cause a short circuit, which may result in fire or electric shock.
- ✓ Place the printer in a horizontal position when installing the paper, even if the model can be installed vertically. If the paper is installed with the printer in a vertical position, the printer will be unstable and could fall, which may result in injury.

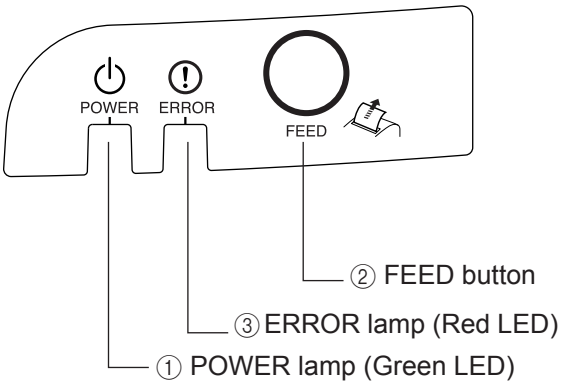
6. Control Panel and Other Functions

6-1. Control Panel

①POWER lamp (Green LED)
Lights when the power is ON.

②FEED button
Press the FEED button to feed roll paper.

③ERROR lamp (Red LED)
Indicates various errors in combination with POWER lamp.



6-2. Basic Indicators

	POWER lamp	ERROR lamp	Buzzer
Power On/Off	On/Off	—	—
No Error	On	Off	—

6-3. Errors

1) Recoverable error

Error Description	POWER lamp	ERROR lamp	Buzzer	Recovery Conditions
Paper end error	On	Flashes (On: 1 sec./Off: 1 sec.)	4 short beeps (0.13 sec.) repeated twice	*1
Printer cover open error	On	On	Beep	*2
Front cover open error	Flashes (On: 0.5 sec./Off: 0.5 sec.)	On	Beep	*3
Paper near end error	On	Flashes (On: 2 sec./Off: 2 sec.)	None	*4
Head high temperature detection	Flashes (On: 1 sec./Off: 1 sec.)	Off	None	*5
Board high temperature detection	Flashes (On: 2 sec./Off: 2 sec.)	Off	None	*6
Cutter error (on models with cutter)	On	Flashes (On: 0.125 sec./Off: 0.125 sec.)	3 short beeps (0.13 sec. + 0.13 sec. + 0.5 sec.)	*7
Mechanical error (other than cutter error)	On	Flashes (On: 0.25 sec./Off: 0.25 sec.)	2 short beeps (0.13 sec. + 0.5 sec.)	*8
Black mark detection error	On	Flashes (On: 0.5 sec./Off: 0.5 sec.)	3 short beeps (0.13 sec. + 0.13 sec. + 0.13 sec.)	*9

*1 Automatically recovered by loading a new paper roll, then closing the printer cover.
*2 Automatically recovered by closing the printer cover.
*3 Automatically recovered by closing the front cover.
*4 Automatically recovered by loading a new paper roll, then closing the printer cover.
*5 Automatically the printer is recovered after the print head has cooled.
A print head temperature error is not abnormal.
*6 Automatically the printer is recovered after the board has cooled.

*7 Automatically the printer is recovered if the cutter returns to the home position after turning the power OFF and ON.
Restoration is also possible with the <DLE> <ENQ> n command when in the ESC/POS mode.

Note

1) If the cutter doesn't return to the home position, or doesn't perform the initial movement, it cannot be recovered.
2) If the paper is jammed, turn the power OFF, clear the jammed paper, then turn the power ON.
3) When the error occurs:
STAR Mode: Non recoverable error
ESC/POS Mode: Recoverable error

*8 Turn the power OFF, clear the jammed paper or remedy another problem and then turn the power ON. Automatically the printer is recovered if the carriage returns to the home position after turning the power OFF and ON.
Restoration is also possible with the <DLE> <ENQ> n command when in the ESC/POS mode.
When the error occurs:
STAR Mode: Non recoverable error
ESC/POS Mode: Recoverable error

*9 For paper jam errors:
Clear the jammed paper and change the paper roll if necessary.
For incorrect paper format errors:
Change the paper roll and use a paper roll with the correct black mark.

2) Non recoverable error

Error Description	POWER lamp	ERROR lamp	Buzzer
Flash memory write error	Off	Flashes (On: 1 sec./ Off: 1 sec.)	None
Thermistor failure error	Off	Flashes (On: 0.25 sec./Off: 0.25 sec.)	2 short beeps (0.13 sec. + 0.5 sec.)
Power supply error	Off	Flashes (On: 2 sec./ Off: 2 sec.)	None
CPU error	Off	On	One long beep (2 sec.)
RAM R/W error	Off	On	None

Note

If a non-recoverable error occurs, turn the power OFF, wait at least 10 seconds, and turn the power back ON. If the non-recoverable error continues to be indicated, consult a dealer for repairs.

6-4. Adjustment Mode

There are the following seven adjustment modes.
The device will enter the adjustment mode if your turn it on while pressing the FEED switch.

(1) The Self Printing Mode is entered by releasing the FEED switch after the buzzer sounds once. (Refer to Section 6-4-1.)

(Holding down for 2 more seconds)

(2) Adjusting the Dot Alignment Mode is entered by releasing the FEED switch after the buzzer sounds twice. (Refer to Section 6-4-2.)

(Holding down for 2 more seconds)

(3) The Hexadecimal Dump Mode is entered by releasing the FEED switch after the buzzer sounds three times. (Refer to Section 6-4-3.)

(Holding down for 2 more seconds)

(4) The Black Mark Sensor Alignment Mode is entered by releasing the FEED switch after the buzzer sounds four times. (Refer to Section 6-4-4.)

(Holding down for 2 more seconds)

(5) The Near End Sensor Adjustment Mode is entered by releasing the FEED switch after the buzzer sounds five times. (Refer to the separate Specifications Manual for details.)

(Holding down for 2 more seconds)

(6) The Memory Switch Manual Setting Mode is entered by releasing the FEED switch after the buzzer sounds six times. (Refer to the separate Specifications Manual for details.)

(Holding down for 2 more seconds)

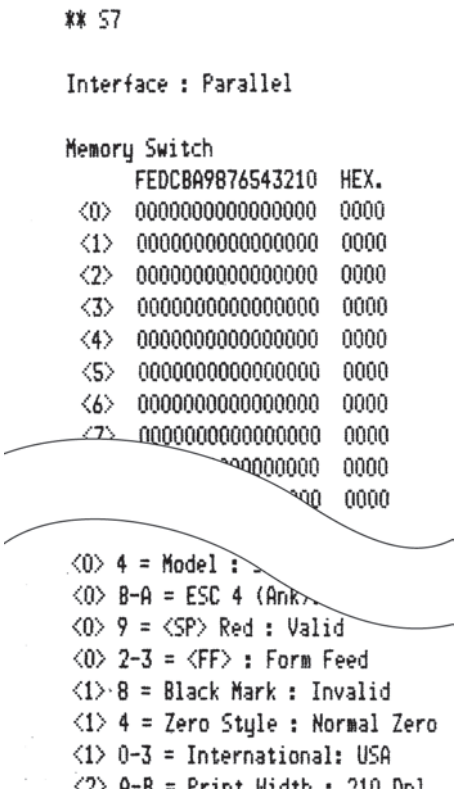
(7) The Memory Switch Override Mode is entered by releasing the FEED switch after the buzzer sounds seven times. (Refer to the separate Specifications Manual for details.)

(Holding down for 2 more seconds)

Returns to (1).

6-4-1. Self Printing Mode

Self-printing will be performed to print the Ver. No. and printer settings. ASCII-printing will be repeated when the FEED switch is held continuously at the end of ASCII-printing. The self-printing mode will end automatically when the FEED button is released at the end of ASCII-printing.



6-4-2. Adjusting the Dot Alignment Mode

You may never have to use the procedure described in this section, but after you have been using your printer for some time you may find that the dots of some graphics do not align correctly. For example, what should look like:

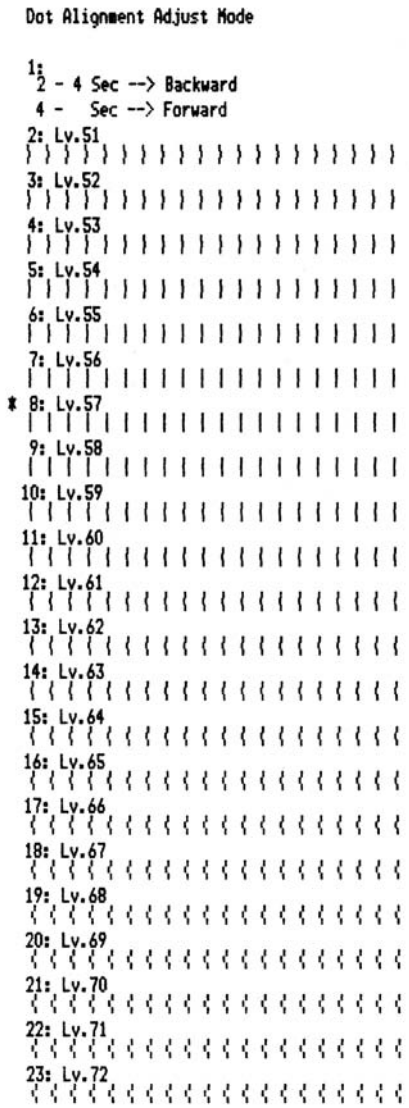
may come out looking like one of the following:

or like this

This is caused when mechanical parts of the printer get out of alignment. This happens only rarely and you may never experience it at all throughout the life of the printer. If you do have problems, use the following procedure to correct it.

(1) Enter the Dot Alignment Adjust Mode according to the procedure described in Section 6-4.

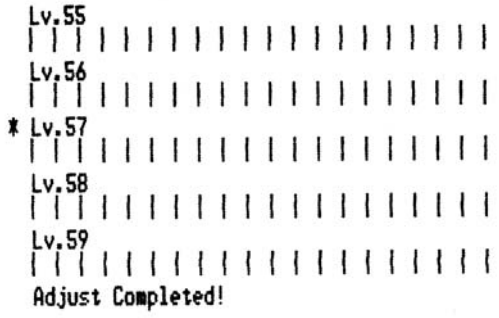
(2) After entering the Dot Alignment Adjust Mode, a printout of the adjustment patterns similar to the printout below will be printed. The asterisk indicates the current adjustment pattern.



(3) To adjust, use the FEED switch to select the adjustment pattern from the printout with the smallest gap between the first printing pass and the return printing pass. Press the FEED switch once to specify the first adjustment pattern, twice to specify the second adjustment pattern, and so on up to seven times to specify the seventh adjustment pattern.
At the number that you want to specify, press and hold (2 seconds) the FEED switch until the long buzzer sounds. This will specify the setting value. (For example, if you want to select the eighth pattern from the top, press the FEED switch seven times. Then, at the eighth pattern, press and hold (2 seconds) the FEED switch until the long buzzer sounds.)
There are only twenty three adjustment patterns. The buzzer will sound each time the FEED switch is pressed. However, if you press the FEED switch more than twenty three times, a warning alert will sound.

(4) If there is no matching pattern among the adjustment patterns, perform the "Backward" or "Forward" operation described below in order to print a printing pattern in which the dot alignment settings are changed. Then, repeat step (3).
Backward:
Press and hold the FEED switch for 2 to 4 seconds. The buzzer will beep, and the printer will print a pattern in which the forward is adjusted more leftward of the presently indicated pattern and the backward is adjusted more rightward.
Forward:
Press and hold the FEED switch for 4 seconds or longer. The buzzer will beep-beep, and the printer will print a pattern in which the forward is adjusted more rightward of the presently indicated pattern and the backward is adjusted more leftward.

(5) After selecting the adjustment pattern, the setting value is stored in the non-volatile memory. A printout similar to the one below with the selected adjustment pattern highlighted and the message "Adjust Completed!" will be printed.
Note: Before the printout is printed, the setting value is stored in the non-volatile memory of the printer after the adjustment pattern has been selected and the long buzzer sounds. During this period, do not set the power switch to off. If this power switch is set to off when the setting value is being stored in the non-volatile memory, the setting value for the adjustment pattern and all of the memory switch settings will be reset.



(6) The long buzzer sounds once more and the setting value is automatically set.
The adjusting the dot alignment mode is complete.

6-4-3. Hexadecimal Dump Mode

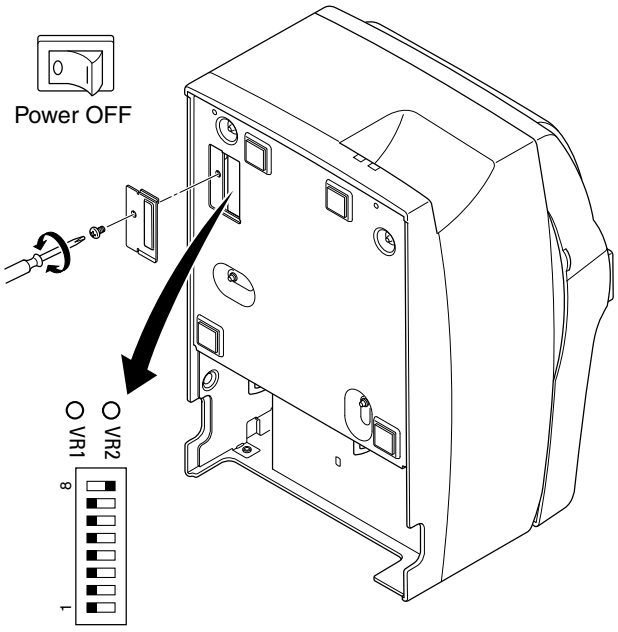
Each of the signals sent from the computer to the printer will be printed out in hexadecimal code.
This function allows you to check if a control code sent to the printer by the program being used is correct or not. The last line is not printed if its data is less than one full line. However, if the FEED switch is pressed, the last line will be printed. To turn off the mode, it is necessary to turn off the printer completely.

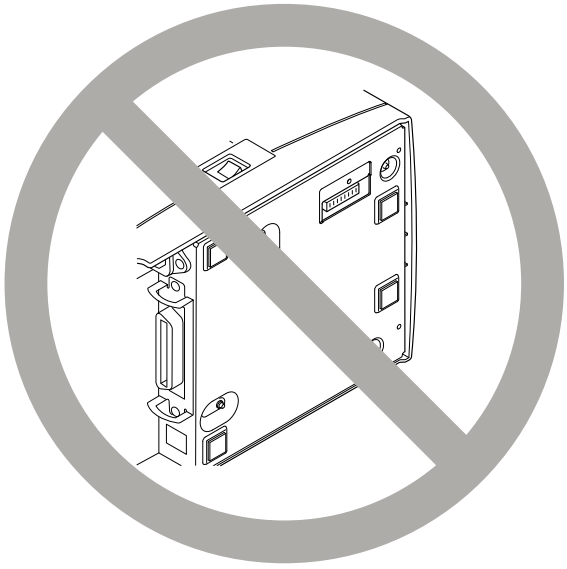
```
//// Hexadecimal Dump ////

00 01 02 03 04 05 06 07        ........
08 09 0A 0B 0C 0D 0E 0F        ........
10 11 12 13 14 15 16 17        ........
18 19 1A 1B 1C 1D 1E 1F        ........
20 21 22 23 24 25 26 27         !"#$%&'
28 29 2A 2B 2C 2D 2E 2F        ()*+,-./
30 31 32 33 34 35 36 37        01234567
38 39 3A 3B 3C 0A              89:;<.
```

6-4-4. Black Mark Sensor Alignment Mode

1. Turn the printer off and unplug the power cord.
2. Place the printer upright as shown below to remove the screws and remove the dip switch cover from the bottom of the printer. Be sure to place the printer upright because you will not be able to properly adjust the printer if it is placed on its side.





3. Since it is adjusted by rotating the volume VR2, check the position of the volume. Prepare a small slotted screwdriver that will fit in the hole.
4. Set the roll paper not for black mark.
5. Enter the black mark sensor adjustment mode according to the procedure described Section 6-4.
6. Rotate the volume VR2 using micro screwdriver, to adjust it to a position whereat both the ERROR (red LED) and the POWER (green LED) lamps light.
7. Turn the power OFF.

This completes the black mark sensor adjustment.

7. Preventing and Clearing Paper Jams

7-1. Preventing Paper Jams

The paper should not be touched during ejection and before it is cut.
Pressing or pulling the paper during ejection may cause a paper jam, paper cutting failure or line feed failure.

7-2. Removing Paper Jam

If a paper jam occurs, clear it as described below.

(1) Set the power switch to off to turn off power to the printer.

(2) Push the cover open lever, and open the printer cover.
If the printer cover will not open on an auto cutter model, it means that the auto cutter is not in the home position (or locked). In this case, return the auto cutter to the home position by following the instructions provided in Section 7-3.

(3) Remove the jammed paper.

⚠CAUTION

Take care not to damage the printer when removing the jammed paper.

---

(4) Position the roll paper straight and close the printer cover gently.
Note 1: Make sure that the paper is positioned straight. If the printer cover is closed with the paper skewed, a paper jam may result.

Note 2: Lock the printer cover by pressing down on the sides. Do not try to close it by pressing down on the center. The cover may not lock properly.

(5) Set the power switch to on to turn on power to the printer. Make sure that the ERROR LED is not lit.
Note: While the ERROR LED is lit, the printer will not accept any commands such as the print command, so make sure that the printer cover is locked properly.

7-3. Releasing a Locked Cutter (Auto Cutter Mode only)

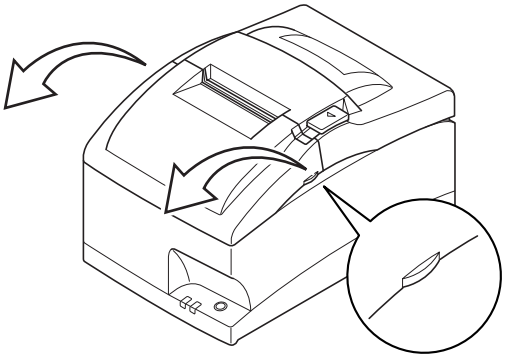
If the auto cutter locks up or fails to cut the paper, follow the steps below.

⚠*WARNING*

Since working on the cutter may be dangerous, be sure to turn off the printer first.

(1) Set the power switch to OFF to turn off the printer.

(2) Ordinarily, a locked cutter will recover automatically by closing all the covers and turning the power back ON.
Recovery means that the locked cutter has been released, so steps (3) and thereafter are unnecessary. If the cutter has not recovered, proceed to step (3).

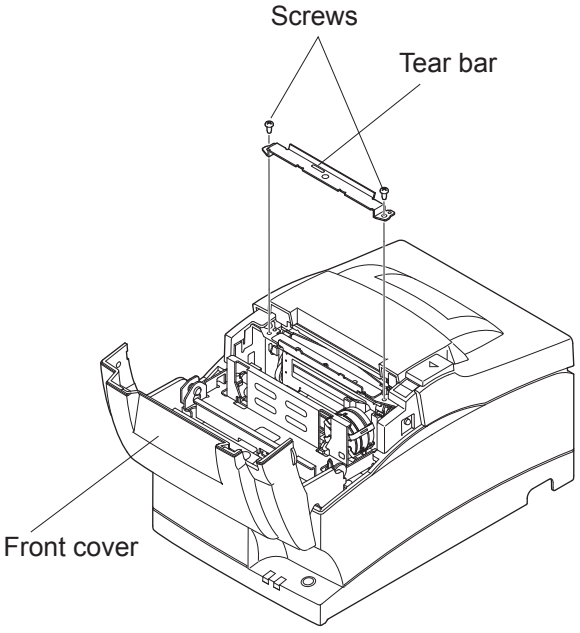


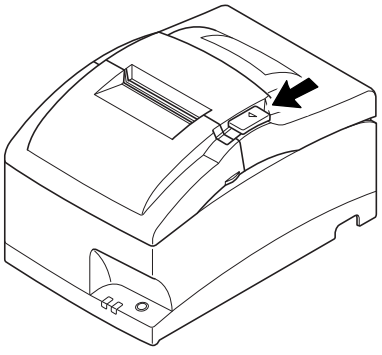
(3) Pull the cover open lever towards you, and open the printer cover. The printer cover may not open due to the cutter being locked. In this case, follow steps (4) and (5) to first open the front cover and remove the tear bar. If the printer cover opens, proceed to step (6).

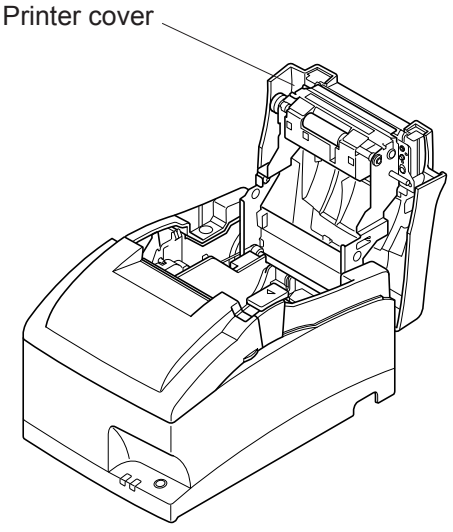
Note: Since the print head is hot immediately after printing, be sure not to touch it. On an auto cutter model, a paper cutter is located at the paper outlet slot. Be careful not to touch the cutter blade.

(4) Open the front cover by holding the finger grips on both ends of the cover and lifting it up.

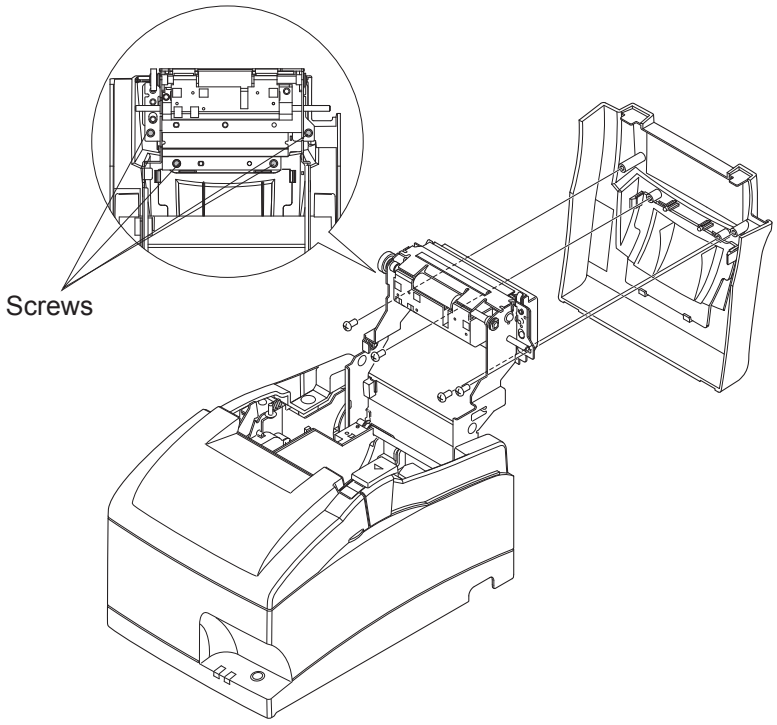
(5) Remove the two screws to remove the tear bar.



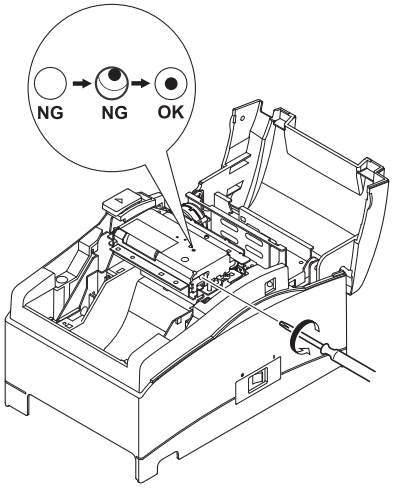




(6) After you have opened the printer cover, remove the four screws to remove the printer cover and reveal the cutter.



(7) If the cutter is locked, insert a Phillips screwdriver into the Phillips screw hole on the side of the cutter, and turn it in the direction of the arrow shown below, in order to return the cutter to its normal position.
(8) Reinstall the printer cover by tightening its screws.
(9) Reinstall the tear bar by tightening its screws.



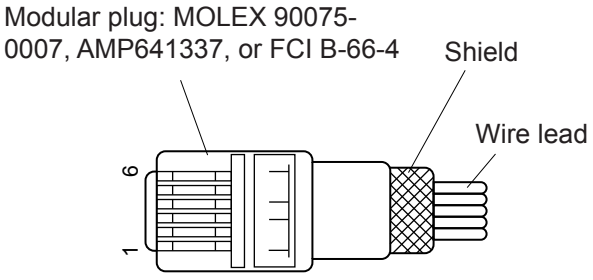
8. Peripheral Unit Drive Circuit

Peripheral unit drive circuit connector only connects to peripheral units such as cash drawers, etc.
Do not connect it to a telephone.
Use cables which meet the following specifications.

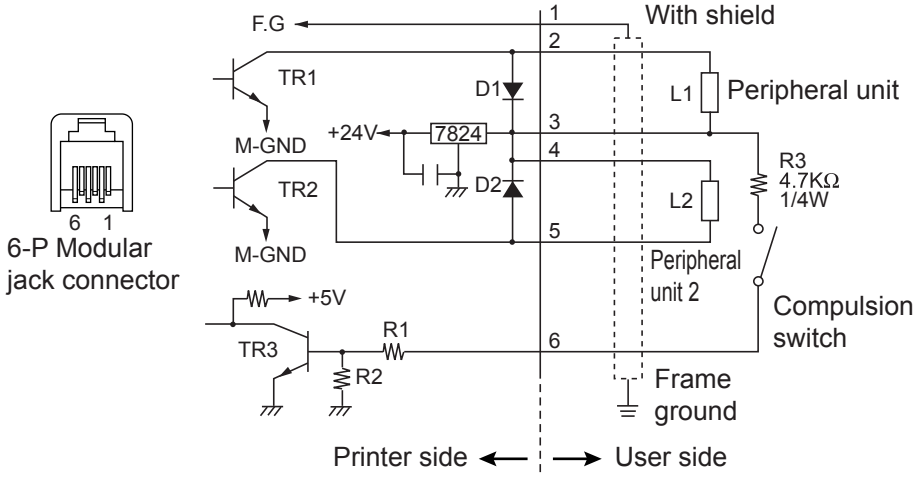
Peripheral Drive Connector

Pin No.	Signal name	Function	I/O direction
1	FG	Frame ground	—
2	DRD1	Drive signal 1	OUT
3	+24V	Drive power	OUT
4	+24V	Drive power	OUT
5	DRD2	Drive signal 2	OUT
6	DRSNS	Sense signal	IN

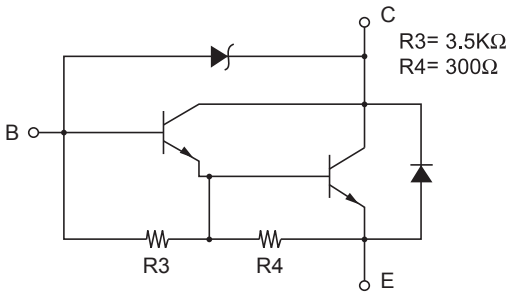
Modular plug



Drive circuit
The recommended drive unit is shown below.



Reference
2SD 1866 Circuit Configuration



Drive Output: 24V, Max. 1.0A
TR1, TR2: Transistor 2SD1866 or equivalent
R1=10k Ω
R2=33k Ω

Notes: 1. Peripheral units 1 and 2 cannot be driven simultaneously. To drive them continuously, set the duty cycle ratio to 20% or less (excluding an externally connected buzzer). Refer to the separate Specifications Manual for details.

2. The following external buzzer is available as an option.
   External buzzer model: RMB-24

Voltage rating:	24V
Average consumption current:	Max. 21 mA (at 24V)
Sound pressure:	Min. 75 dB at 1 m
Lead wires:	red (+) black (-)

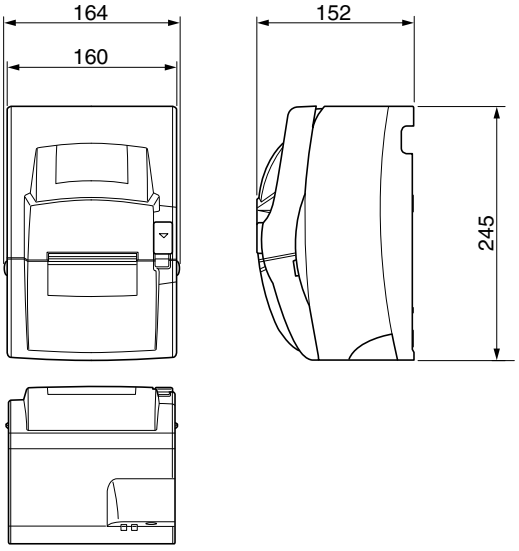
3. Never use the external buzzer command if you connect a device (such as a cash drawer) other than an external buzzer. It could damage the connected device and the printer circuit. Refer to the separate Specifications Manual for details on commands.
4. The status of the compulsion switch can be known from the status command. Refer to the separate Specifications Manual for details.
5. Minimum resistance for coils L1 and L2 is 24.
6. Absolute maximum ratings for diodes D1 and D2 (Ta = 25°C) are:
   Average Rectified Current I_o = 1A
7. Absolute maximum rating for transistors TR1 and TR2 (Ta = 25°C) are:
   Collector current I_C = 2.0 A

9. General Specifications

9-1. General Specifications

Printing method:	Serial impact dot matrix
Print direction:	Bi-directional
Number of head pins:	9 wires
Number of print columns:	42 columns
Character set:	ASCII 95 characters Extended graphics: 128 × 40 pages (Star mode) 128 × 9 pages (ESC/POS) International characters: 46 (Star mode) 37 (ESC/POS)
Font configuration (ANK)	7 (Half dots) × 9 or 5 × 9
Printing width:	63 mm (210 dots)/57 mm (190 dots)/45 mm (150 dots)
Print speed:	Max. 4.7 lines per sec. (76 mm paper width, 40 columns)
Line spacing:	1/6-inch (default), n/144-inch (programmable by command)
Paper feed method:	Friction feed
Paper feed speed:	Approx. 141 mm/sec.
Paper specifications	
Paper type:	Ordinary bond and carbonless copy paper
Paper width:	76±0.5 mm (3.0 inches)/57.5±0.5 mm (2.25 inches)/ 69.5±0.5 mm (2.75 inches)
Roll diameter:	85mm (3.35 inches) max.
Core:	12±1 mm (Inner dia.), 18±1 mm (Outer dia.) Note: Paper rolls with the end of the paper glued or taped to the paper roll core or paper rolls with the end of the paper folded can cause a paper jam.
Thickness	Single: 0.06 mm to 0.085 mm Copies: Original + 2 copies (Max. 0.2 mm)
Auto cutter	Partial cut (Auto cutter model only)
Ink ribbon specifications	
Ribbon type:	Cartridge cassette
Color:	441Ribbon Black/Red: 2 colors (Black/Red) 441Ribbon Black: Single color (Black)

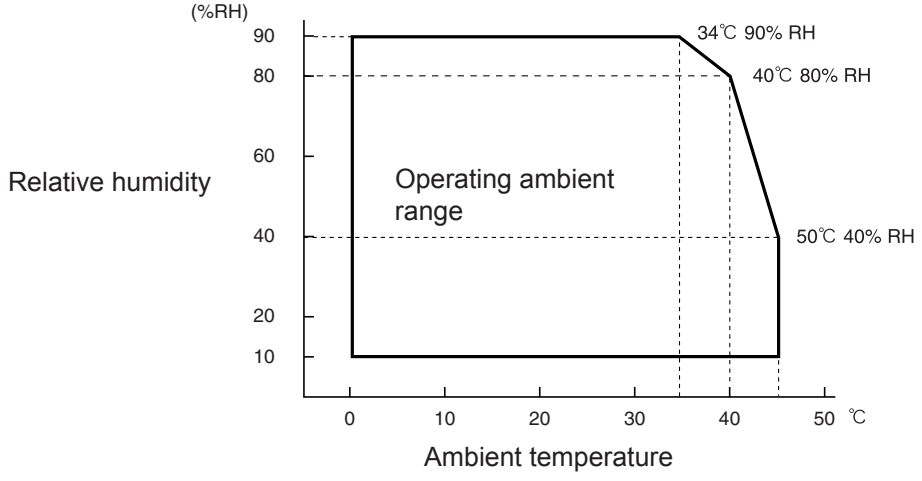
Ribbon material:	Nylon 66 (#40 denier)
Ribbon life:	441Ribbon Black/Red: Black 1,500,000 characters/Red 750,000 characters 441Ribbon Black: Black 3,000,000 characters
Overall dimensions:	160 (W) × 245 (D) × 152 (H) mm



Weight:	Approx. 3.0 kg (Tear bar model) Approx. 3.2 kg (Auto cutter model)
Interface	Parallel interface or RS-232C interface or USB Interface or Ethernet Interface or Wireless LAN Interface
Peripheral unit drive circuit:	2 circuits (24V, max. 1A)

Ambient temperature/humidity

Operating temperature:	0°C to +50°C
Operating humidity:	0% to 90% RH (at 34°C, without condensation)
Storage temperature:	–20°C to +70°C
Storage humidity:	5% to 95%RH (at 40°C, without condensation)



Mechanical life:	10 million lines (except head life and auto cutter)
Print head life:	150 million characters
Auto cutter life:	1 million cuttings (if the paper thickness is between 65 and 100 μm)

9-2. Power Supply Specifications

Power Supply:	
Input:	100 to 240V AC, 50/60Hz
Consumption Current:	
	Conditions: Excluding perpheral unit driving
Operating:	Approx. 36 W (at ASCII printing)
Stand-by:	Approx. 10 W

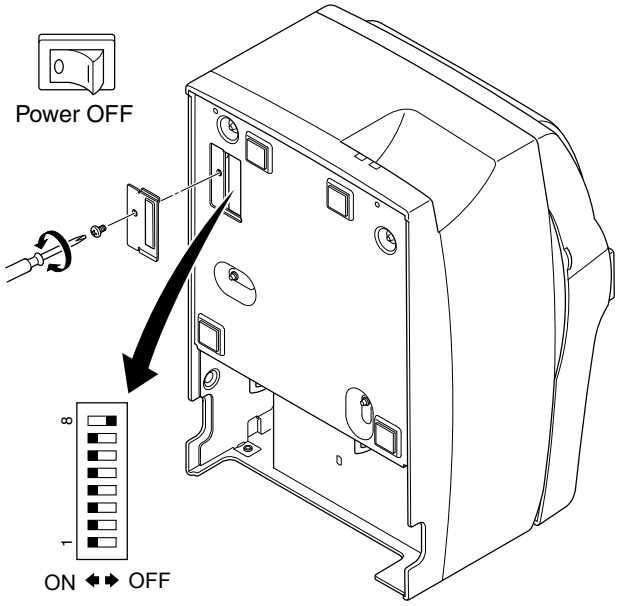
10. Dip Switch Setting

A DIP switch is provided at the bottom of the printer, and can be set as given in the table below. Be sure to set the power switch to off before changing the settings. It is recommended to use a pointed item like a pen or flat-blade driver screw to change the settings. The settings will become effective when the power switch is set to on again.

The following is the procedure for changing the settings on DIP switches.

1. Make sure the printer is turned off.

2. Remove the screw from the DIP switch cover. Then take off the DIP switch cover, as shown in the illustration below.



3. Set the switches using a pointed tool, such as a pen or flat-blade screwdriver.

4. Replace the DIP switch cover. Then secure it with the screw.
   The new settings take effect when you turn on the printer.

■ DIP switch

SW No.	Function	ON	OFF
1-1	Always ON	Should be set on	
1-2	Auto Cutter *1	Invalid	Valid
1-3	Always ON	Should be set on	
1-4	Command emulation	Star	ESC/POS
1-5	USB mode *2	Printer class	Vendor class
1-6	2 colors printing	Valid	Invalid
1-7	Reserved		
1-8	Print head model *3	18 pin wire	9 pin wire

*1 The factory settings for enabling/disabling the auto cutter are as follows.
Models without auto cutter: Invalid (Switch 1-2 = on)
Models with auto cutter: Valid (Switch 1-2 = off)
Note: Do not enable the auto cutter for models without the auto cutter (i.e., models with a tear bar). A mechanical error will occur.

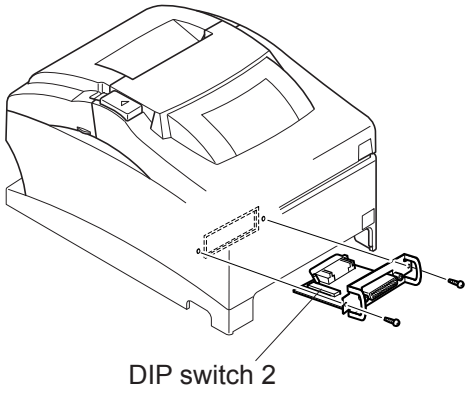
*2 USB interface model only

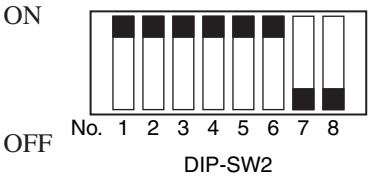
*3 Do not change the default setting (Switch 1-8 = off).

10-1. RS-232C Interface Model

The RS-232C interface model is equipped with DIP switches on the serial interface board unit to change the communication settings. Change the settings for DIP switch No. 2 according to the following procedures.

1. Turn off the printer and all components connected to it.
2. Remove the 2 screws.
3. Remove the serial interface board unit.
4. Change the setting of the DIP switches.
5. Replace the serial interface board unit.
   Then secure it with the screws.
6. Turn on the printer and all components connected to it.





The factory settings of DIP switch are all on, except for switches 7 and 8.

DIP-SW 2

Switch	Function	ON	OFF
2-1	Baud Rate	See table below	
2-2			
2-3	Data Length	8 bits	7 bits
2-4	Parity Check	Disabled	Enabled
2-5	Parity	Odd	Even
2-6	Handshake	DTR/DSR	XON/XOFF
2-7	Pin #6 (DSR) reset signal	Valid	Invalid
2-8	Pin #25 (INIT) reset signal	Valid	Invalid

Baud Rate Settings Table

Baud Rate	Switch 2-1	Switch 2-2
4800BPS	OFF	ON
9600BPS	ON	ON
19200BPS	ON	OFF
38400BPS	OFF	OFF

10-2. Parallel Interface Model

The parallel interface model is equipped with the main DIP switch only.

10-3. USB Interface Model

The USB interface model is equipped with the main DIP switch only.

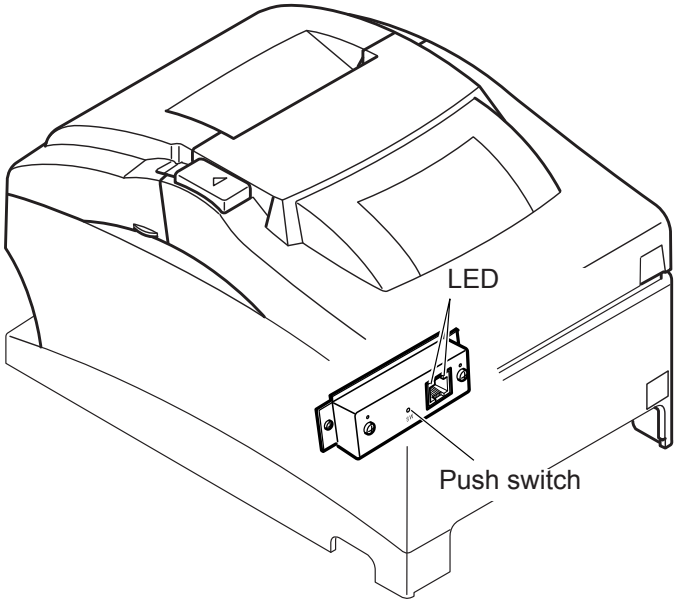
10-4. Ethernet Interface Model

■ Initializing Settings

Set the push switch as described below to initialize the setting information. Push the switch for one to five seconds while running under normal operating mode. The green and red LEDs will flash with a regular pattern. After that, push the switch once again in that state to turn OFF both of the red and green LEDs. This will return the settings of the interface board to their default, or ex-factory, settings. After the interface board has been initialized, the printer will automatically reboot itself.

■ LED Display

Green : Lights when other party connection is recognized as 100BASE-TX.
Red : Lights when packets are received.



10-5. Wireless LAN Interface Model

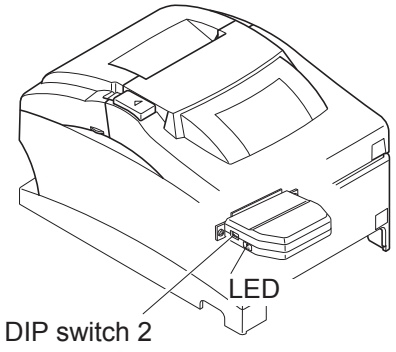
DIP-SW 2

Switch	ON	OFF
2-1	Fixed at OFF	
2-2	Initialize of setting information	—

Change DIP Switch 2-2 to ON to initialize the setting information when the power is turned on.
The factory settings of DIP switch are all off.

LED Display

Green : Lights when pockets are received.



DIP switch 2

Note:

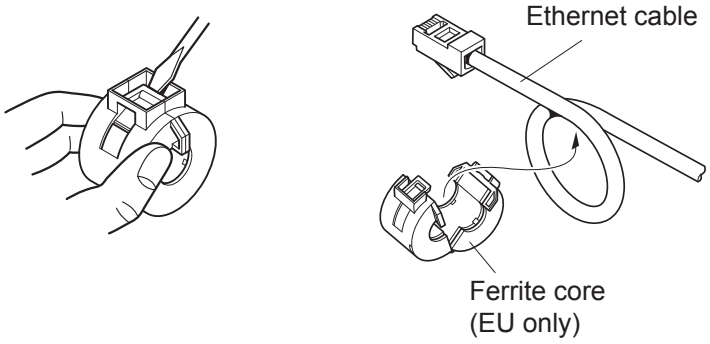
- This product contains a built-in wireless device and can only be used in the following countries.
  USA, UK, France, Ireland, Belgium, Germany, Austria, Switzerland, Italy, Denmark, Norway, Sweden, Portugal, Spain, Estonia, Finland, Greece, Liechtenstein, Luxemburg, Netherlands, Canada, Slovakia, Slovenia, Czech, Hungary, Poland, Latvia, and Lithuania.

* This product contains Transmitter Module which conforms to the R&TTE Directive.
* This product contains Transmitter Module FCC ID: M4B6180210.
* This product contains Transmitter Module IC: 5844A-6180210.
* Strictly observe the export control laws of the country for export when exporting this product.

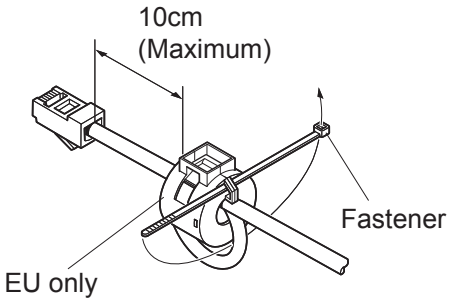
Installing the Ferrite Core (Wireless LAN Model for EU Only)

Install the ferrite core onto the peripheral drive cable to prevent radio interference. Use the ferrite core only for the wireless LAN model in the EU.

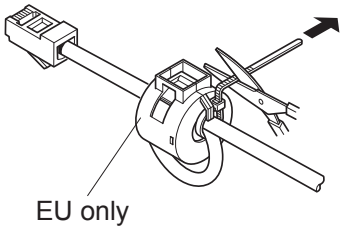
① Install the ferrite core onto the peripheral drive cable as shown in the illustration.



② Pass the fastener through the holes in the ferrite core as shown in the illustration.

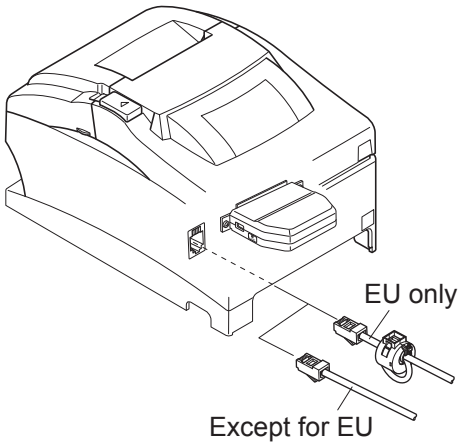


③ Loop the fastener around the cable, and then pull the end of the fastener tightly through its buckle. Use a pair of scissors to cut off the excess end of the fastener.



Connecting the peripheral drive cable

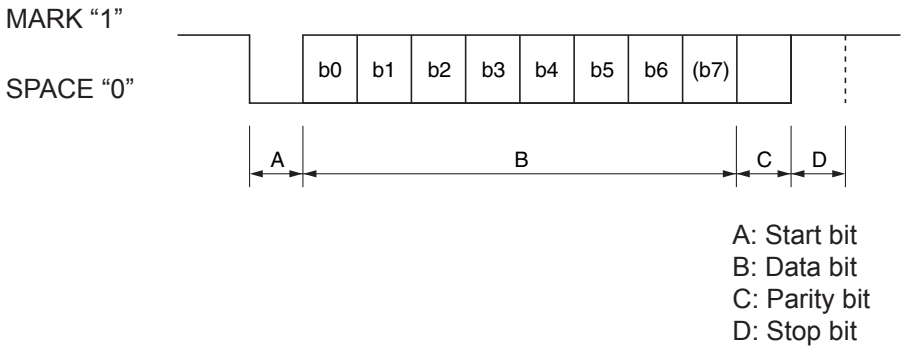
Connect the peripheral drive cable to the connector on the printer. Then, connect the other end of the cable to the peripheral drive circuit.



11. RS-232C Serial Interface

11-1. Interface Specifications

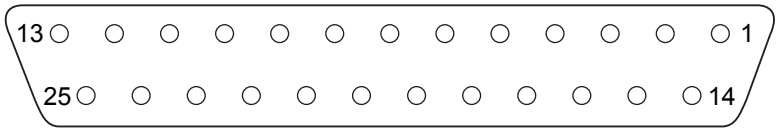
①	Data transmission method:	Asynchronous serial interface
②	Baud rate:	Selectable from 4800, 9600, 19200, 38400 bps (Refer to “10. DIP Switch Setting”.)
③	Word length	Start bit: 1 bit Data bit: 7 or 8 bits (selectable.) Parity bit: Odd, even or none (selectable.) Stop bit: 1 bit length
④	Signal polarity	RS-232 MARK: Logic “1” (–3V to –15V) SPACE: Logic “0” (+3V to +15V)



11-2. Pins and Signal Names

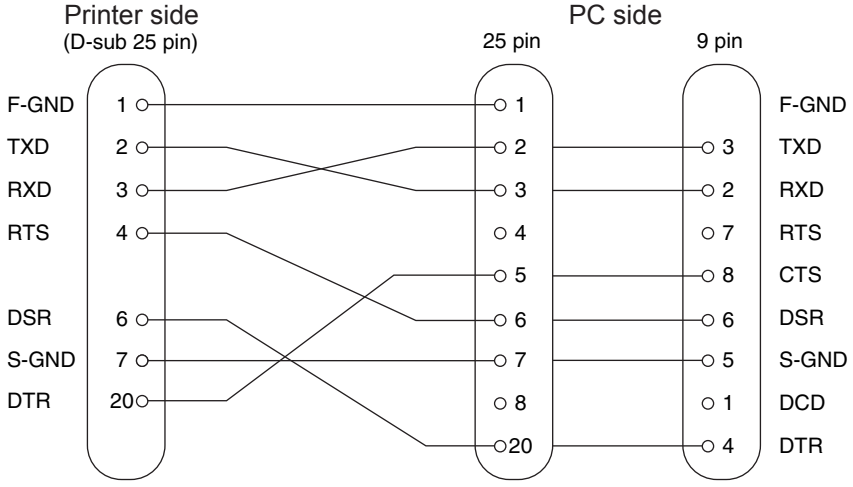
<table>
<tr><th>Pin No.</th><th>Signal Name</th><th>Direction</th><th>Function</th></tr>
<tr><td>1</td><td>FG</td><td>—</td><td>Frame ground</td></tr>
<tr><td>2</td><td>TXD</td><td>OUT</td><td>Transmission data</td></tr>
<tr><td>3</td><td>RXD</td><td>IN</td><td>Receive data</td></tr>
<tr><td>4</td><td>RTS</td><td>OUT</td><td>Always space</td></tr>
<tr><td>5</td><td>N.C.</td><td></td><td>Not connected</td></tr>
<tr><td rowspan="2">6</td><td rowspan="2">DSR</td><td rowspan="2">IN</td><td>Dip switch 2-7 = OFF
(1) STAR Mode
Status of this signal is not checked.
(2) ESC/POS Mode
• In DTR/DSR communication mode
Memory Switch 4-5 = “0”:
signal line indicating whether host is enabled or disabled to receive data is checked.
Space: Host enabled to receive
Mark: Host disabled to receive
Memory switch 4-5 = 1:
Status of this signal is not checked.
• In X-ON/X-OFF communication mode, status of this signal is not checked.</td></tr>
<tr><td>Dip switch 2-7 = ON
This is an externally reset signal.
A mark above 1 ms pulse width engages reset.</td></tr>
<tr><td>7</td><td>SG</td><td></td><td>Signal ground</td></tr>
<tr><td>8 -19</td><td>N.C.</td><td></td><td>Not connected</td></tr>
<tr><td>20</td><td>DTR</td><td>OUT</td><td>Indicates whether data receive from host is enabled or disabled.
DTR/DSR Communication Mode
Space when receive is enabled.
<table>
<tr><th rowspan="2">Printer status</th><th colspan="2">Memory switch 6-9</th></tr>
<tr><th>0</th><th>1</th></tr>
<tr><td>1. During the period from when the power is turned on (including resetting using the interface) to when the printer is ready to receive data.</td><td>BUSY</td><td>BUSY</td></tr>
<tr><td>2. During self printing and dot alignment adjustment.</td><td>BUSY</td><td>BUSY</td></tr>
<tr><td>3. When the printer stops printing due to a paper end or an optional paper near end.</td><td>BUSY</td><td>—</td></tr>
<tr><td>4. When an error has occurred.</td><td>BUSY</td><td>—</td></tr>
<tr><td>5. When the receive buffer becomes full.</td><td>BUSY</td><td>BUSY</td></tr>
</table></td></tr>
</table>

Pin No.	Signal Name	Direction	Function
20	DTR	OUT	X-On/X-Off Communication Mode Always space, except during following conditions: • Period between reset and communication enabled • During self printing and dot alignment adjustment
21 - 24	N.C.		Not connected
25	INIT		Dip switch 2-8 = OFF Status of this signal is not checked.
			Dip switch 2-8 = ON This is an externally reset signal. A space above 1 ms pulse width engages reset.



11-3. Interface Connections

Refer to the interface specifications of the host for details on connecting to its interface connector. The following illustration shows a typical connection configuration.



12. Parallel Interface

The two-way parallel interface is compatible with the IEEE1284 compatibility mode and nibble mode.

12-1. Table of Connection Signals for Each Mode

Pin No.	Direction	Compatibility Mode Signal Name	Nibble Mode Signal Name
1	In	nStorobe	HostClk
2	In	Data0	Data0
3	In	Data1	Data1
4	In	Data2	Data2
5	In	Data3	Data3
6	In	Data4	Data4
7	In	Data5	Data5
8	In	Data6	Data6
9	In	Data7	Data7
10	Out	nAck	PtrClk
11	Out	Busy	PtrBusy/Data3,7
12	Out	PError	AckDataReq/Data2,6
13	Out	Select	Xflag/Data1,5
14	In	nAutoFd	HostBusy
15		N/C	—
16		GND	GND
17		Flame GND	Flame GND
18	Out	Logic High	Logic High
19		GND	GND
20		GND	GND
21		GND	GND
22		GND	GND
23		GND	GND
24		GND	GND
25		GND	GND
26		GND	GND
27		GND	GND
28		GND	GND
29		GND	GND
30		GND	GND

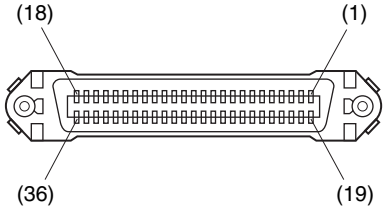
Pin No.	Direction	Compatibility Mode Signal Name	Nibble Mode Signal Name
31	In	nInit	nInit
32	Out	nFault	nDataAvail/Data0,4
33		EXT GND	—
34	Out	Compulsion Status	—
35	Out	Logic High (+5V)	—
36	In	nSelectIn	1284Active

Note: 1. The prefix "n" on the signal name refers to low active signals.
If the host does not have any one of the signal lines listed above, two-way communication fails.

2. For interfacing, signal lines should always use twisted pair cables with the return sides connected to the signal ground level.

3. Cautions when resetting the printer using the nInit signal (#31 pin).
Reset can be made from #31 pin (nInit signal) of the interface by memory switch setting. (Factory setting is reset.)
In addition, when reset has been enabled by #31 pin (nInit signal), it can be set to reset when the following conditions have been established: memory switch settings for 6-D and 6-E have been changed, #36 pin (nSelectIn/1284 active signal) is low, and #31 pin (nInit signal) is low.
For instructions on setting the memory switch, please refer to the separate Specification Manual.

4. During factory output, IFEE 1284 printer device ID reply will be "Invalid." To get the device ID, change memory switch 6-C to "Valid." For instructions on setting the memory switch, please refer to the separate Specification Manual.



This connector mates with an Amphenol 57-30360 connector

Parallel interface connector (printer side)

13. USB, Ethernet and Wireless LAN Interface

13-1. USB Interface Specifications

1.	General Specification:	Conforms to USB 2.0 Specifications
2.	Communication Speed:	USB Full Speed Mode (12 Mbps)
3.	Communication Method:	USB Bulk Transmission Mode
4.	Power Specifications:	USB Self-power Function
5.	Connector:	USB Up-Stream Port Connector (USB Type-B)

13-2. Ethernet Interface Specifications

1.	General Specification:	Conforms to IEEE802.3
2.	Communication Media:	10 Base-T/100 Base-TX
3.	Communication Speed:	10/100 Mbps
4.	Protocol:	TCP/IP
5.	TCP/IP detail:	ARP, RARP, BOOTP, DHCP, LPR, #9100, FTP, HTTP, TELNET, TFTP
6.	Connector:	RJ-45 (8-pin modular)

13-3. Wireless LAN Interface Specifications

1.	General Specification:	Conforms to IEEE802.1lb
2.	Communication Media:	2.4 GHZ DSSS wireless CF card
3.	Communication Speed:	1M/2M/5.5M/11Mbps AUTO Full-Back
4.	Protocol:	TCP/IP
5.	TCP/IP detail:	ARP, RARP, BOOTP, DHCP, LPR, #9100, IPP, POP3, HTTP, TELNET, SMTP, SNMP, FTP
6.	Operating Channels:	North America : 1-11 ch Japan : 1-14 ch Europe : 1-13 ch

14. Memory Switch Settings

Each memory switch is stored in EEPROM. For details on the functions and settings of memory switches, see the separate Specification Manual.
The table below shows the factory settings for the memory switches.

Memory Switch	Hexadecimal Code
0	0000
1	0000
2	0000
3	0000
4	0000
5	0000
6	0000
7	0000
8	0000
9	0000

⚠WARNING

Changing the memory switch settings can cause the printer to fail to operate correctly.

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Tel: 1-800-Oki-Data (1-800-654-3282) Fax: (856) 222-5320 www.okiprintingsolutions.com

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